UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,149	06/16/2006	Jun Keun Chang	CHANG223	2567

1444 7590 09/24/2009

BROWDY AND NEIMARK, P.L.L.C.
624 NINTH STREET, NW
SUITE 300
WASHINGTON, DC 20001-5303

EXAMINER	
JIANG, FANG-XING	
ART UNIT	PAPER NUMBER
2815	

MAIL DATE	DELIVERY MODE
09/24/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/583,149	CHANG ET AL.	
	Examiner	Art Unit	
	FANG-XING JIANG	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02/27/2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The Office Action is in response to the Applicant's communication filed on February 27, 2009. In virtue of this communication, claims 1-19 are currently presented in the instant application, wherein claims 1, 2 and 10 are amended.

Drawings

1. The drawings submitted on 02/27/2009 are accepted.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiyama (U.S. Pat. No. 6,559,940; hereinafter "Fujiyama"), in view of McReynolds (U.S. Pat. No. 6,425,972: hereinafter "McReynolda"), Chou (U.S. Pub. No. 2002/0177319; hereinafter "Chou"), and Ikeda et al. (U.S. Pat. No. 4,485,171; hereinafter "Ikeda").

With respect to claim 1, Fujiyama discloses in Figs.1a-b, a method of bonding an upper substrate and a lower substrate in order to manufacture a plastic micro chip comprising:

- the upper substrate [1], the lower substrate [2] and a sample filling space [6] having a predetermined height for filling a sample

between the upper and lower substrates (The fine passage groove 6 is served as the sample filling space. “A fine passage groove 6 to be used as a liquid sample passage having a width and a depth less than several hundreds um formed”, column 3, lines 64-66. see Figs.1a-b), comprising the steps of:

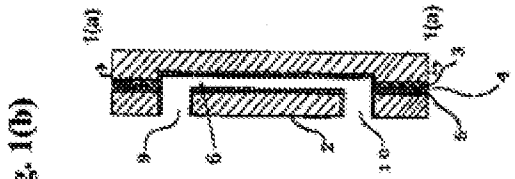


Fig. 1(b)

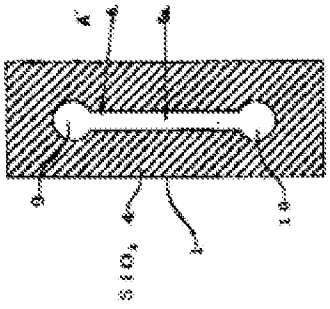


Fig. 1(a)

Fujiyama does not disclose:

- (a) forming a fine channel space for filling a bonding organic solvent in a bonding region of a circumference of the sample filing space; and
- (b) overlapping the upper and lower substrates each other, and then introducing an organic solvent into the fine channel space to upper and lower substrates; wherein the fine channel space is a sealed region between the upper and lower substrates.

- wherein the fine channel space is a sealed region between the upper and lower substrates.

However, McReynolds discloses:

- (a) forming a fine channel space [16] (the microscale groove or indentation 16 (column 3, lines 64-65) is served as the fine channel space); and
- (b) overlapping the upper [18] and lower [12] substrates each other (The first planar surface 20 of the top substrate 18 is then mated, e.g., placed into contact with, and bonded to the planar surface 14 of the bottom substrate 12, covering and sealing the grooves and/or indentations 16 in the surface of the bottom substrate, column 4, lines 6-10), and then wherein the fine channel space is a sealed region between the upper [18] and lower [12] substrates.

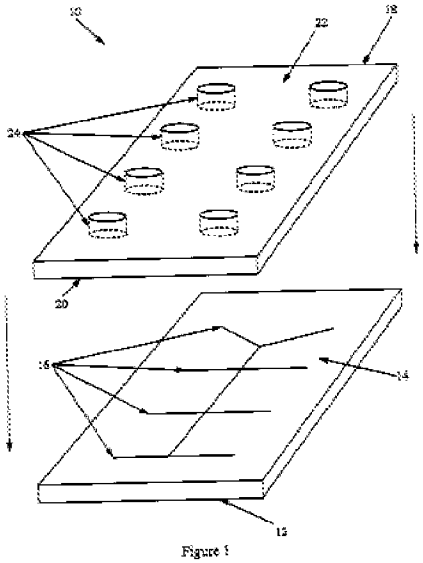
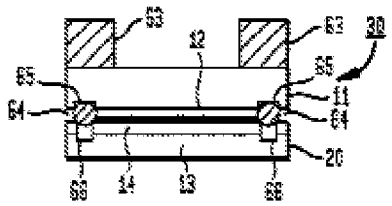


Figure 1

And Chou discloses in Fig.4D:

- (a) forming a fine channel space [65,66] (peripheral recesses 65,66; PH [0030], line 4) in a bonding region of a circumference of the sample filing space (it is well known that the **peripheral** recesses is a **circumference**; see Chou Fig.4D) ; and
- wherein the fine channel space [65, 66] is a sealed region between the upper [11] and lower [20] substrates (see Chou Fig.4D).

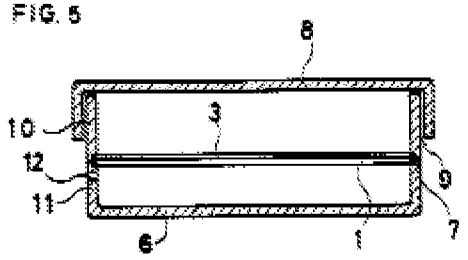
FIG. 4D



And Ikeda discloses:

- (a) for filling a bonding organic solvent,
- (b) introducing an organic solvent (It is well known that the methylene chloride is an organic solvent) to upper [10] and lower [11] substrates (see Ikeda: Securing or bonding of the upper and lower sections 10 and 11 with the pad assembly clamped therebetween may be carried out by a variety of techniques. …. the preferred examples being methylene chloride and xylene. Column 5, lines 1-17);

FIG. 5



It would have been obvious to one of ordinary skill in the art at the time the invention was made to further implement a method of bonding an upper substrate and a lower substrate having a sample filling space of Fujiyama by arranging a method of forming a fine channel space in a bonding region as taught by McReynolds for correctly and precisely bonding without influencing on properties of sample filling space, and to improved methods of manufacturing microfabricated substrates, and particularly, to improved methods of bonding together microfabricated substrates in the manufacture of microfluidic devices thereon (see McReynolds: column 2, lines 39-42). Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further implement a method of bonding an upper substrate and a lower substrate having a sample filling space of Fujiyama by arranging a bonding region of a circumference of the sample filing space as taught by Chou to bonding wherein direct fluid pressure is used to press together a plurality of layers to be bonded. The process is particularly useful to provide void free, uniform bonding over an increased area. The bonding can be by pressure alone or by the application of pressure and heat or electrical field thereon (see Chou: Ph [0002]). Then, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further implement a method of bonding an upper substrate and a lower substrate having a sample filling

space of Fujiyama by arranging a method of introducing an organic solvent to upper and lower substrates as taught by Ikeda to bond upper and lower substrate to each other by applying a solvent capable of dissolving the material of which the vessel is made, or an adhesive comprising such a solvent having the material of which the vessel is made dissolved therein, to the mating edges of the upper and lower sections to thereby partially dissolve the vessel material, eventually forming an integral bond thereon (see Ikeda: column 5, lines 8-14).

With respect to claim 2, Fujiyama discloses in Figs.1a-b, a method of bonding an upper substrate and a lower substrate in order to manufacture a plastic micro chip comprising:

- the upper substrate [1], the lower substrate [2] and a sample filling space [6] having a predetermined height for filling a sample between the upper and lower substrates (The fine passage groove 6 is served as the sample filling space. “A fine passage groove 6 to be used as a liquid sample passage having a width and a depth less than several hundreds um formed”, column 3, lines 64-66. see Figs.1a-b), comprising the steps of:

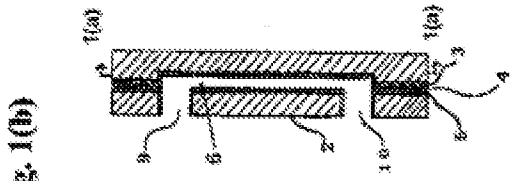


Fig. 1(b)

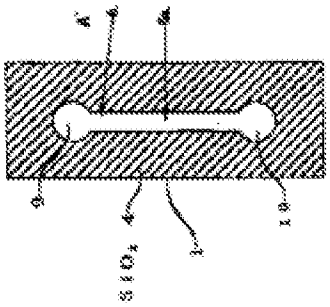


Fig. 1(a)

Fujiyama does not disclose:

- (a) forming a fine channel space for filling a bonding organic solvent in a bonding region of a circumference of the sample filing space; and
- (b) introducing an organic solvent into the fine channel space to upper and lower substrates; wherein the fine channel space is a sealed region between the upper and lower substrates.
- wherein the fine channel space is a sealed region between the upper and lower substrates.

However, McReynolds discloses:

- (a) forming a fine channel space [16] (the microscale groove or indentation 16 (column 3, lines 64-65) is served as the fine channel space) ; and

- (b) wherein the fine channel space is a sealed region between the upper [18] and lower [12] substrates.

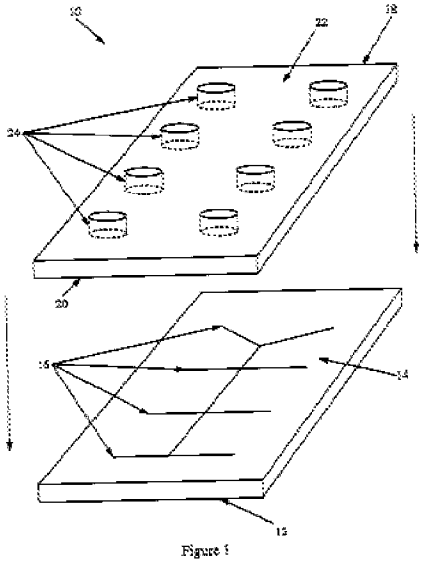
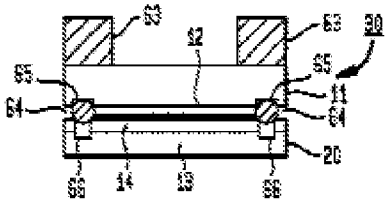


Figure 1

And Chou discloses in Fig.4D:

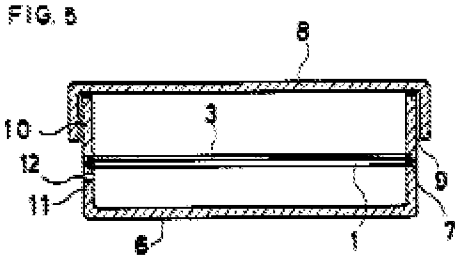
- (a) forming a fine channel space [65,66] (peripheral recesses 65,66; PH [0030], line 4) in a bonding region of a circumference of the sample filing space (it is well known that the **peripheral** recesses is a **circumference**; see Chou Fig.4D) ; and
- wherein the fine channel space [65, 66] is a sealed region between the upper [11] and lower [20] substrates (see Chou Fig.4D).

FIG. 4D



And Ikeda discloses:

- (a) for filling a bonding organic solvent,
- (b) introducing an organic solvent (It is well known that the methylene chloride is an organic solvent) to upper [10] and lower [11] substrates (see Ikeda: Securing or bonding of the upper and lower sections 10 and 11 with the pad assembly clamped therebetween may be carried out by a variety of techniques. …. the preferred examples being methylene chloride and xylene. Column 5, lines 1-17);



It would have been obvious to one of ordinary skill in the art at the time the invention was made to further implement a method of bonding an upper substrate and a lower substrate having a sample filling space of Fujiyama by arranging a method of forming a fine channel space in a bonding region as taught by McReynolds for correctly and precisely bonding without influencing on properties of sample filling space, and to improved methods of manufacturing microfabricated substrates, and particularly, to improved methods of bonding together microfabricated substrates in the manufacture of microfluidic devices thereon (see McReynolds: column 2, lines 39-42). Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was

made to further implement a method of bonding an upper substrate and a lower substrate having a sample filling space of Fujiyama by arranging a bonding region of a circumference of the sample filing space as taught by Chou to bonding wherein direct fluid pressure is used to press together a plurality of layers to be bonded. The process is particularly useful to provide void free, uniform bonding over an increased area. The bonding can be by pressure alone or by the application of pressure and heat or electrical field thereon (see Chou: Ph [0002]). Then, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further implement a method of bonding an upper substrate and a lower substrate having a sample filling space of Fujiyama by arranging a method of introducing an organic solvent to upper and lower substrates as taught by Ikeda to bond upper and lower substrate to each other by applying a solvent capable of dissolving the material of which the vessel is made, or an adhesive comprising such a solvent having the material of which the vessel is made dissolved therein, to the mating edges of the upper and lower sections to thereby partially dissolve the vessel material, eventually forming an integral bond thereon (see Ikeda: column 5, lines 8-14).

With respect to claim 3, Fujiyama with modified McReynolds further discloses: further comprising a step of

- forming one or more holes [24] (see McReynolds: The holes 24 in the top portion of the device are oriented such that they are in communication with at least one of the channels and/or chambers

formed in the interior portion of the device from the grooves or indentations; column 4, lines 12-16)

Fujiyama with modified Ikeda further discloses:

- for introducing the organic solvent communicating with the fine channel when the fine channel is formed in the step of (a) (see Ikeda: Securing or bonding of the upper and lower sections 10 and 11 with the pad assembly clamped therebetween may be carried out by a variety of techniques. …. the preferred examples being methylene chloride and xylene. Column 5, lines 1-17);

With respect to claim 4, Fujiyama, as modified, further discloses: further comprising a step of

- performing a corona or plasma treatment for the bonding area (the joining interfaces are covered by the SiO.sub.2 films 4, 5 formed by the sputtering method, column 5, lines 45-47. Inherently, sputtering is also plasma process) so that the organic solvent subsequently introduced smoothly flows and a bonding strength is increased, after forming the fine channel (the SiO.sub.2 thin films having a hydrophilic property. Column 6, lines 15-16).

With respect to claim 5, Fujiyama with modified McReynolds further discloses:

- wherein the fine channel has height of 100 um or less. (See McReynolds: depth, width, length, diameter, etc., that is less than 500 um, and typically between about 0.1 um and about 500 um. Column 2, lines 57-59).

The reference discloses a range of channel height typically between about 0.1 um and about 500 um. As the evidence establishes that a larger set would have been workable and the specification does not disclose any new or unexpected results commensurate with the scope of the claims, the limitation of "depth, width, length, diameter, etc., that is less than 500 um, and typically between about 0.1 um and about 500 um" would have been obvious. "Determining where in a disclosed set of percentage ranges the optimum combination of percentages lies is prima facie obvious" *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003); see also *In re Geisler*, 116 F.3d 1465, 1470, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997) ("It is not inventive to discover the optimum or workable range by routine experimentation." (quoting *In re Aller*, 220 F.2d 454,456, 105 USPTQ 233,235 (CCPA 1995)).

With respect to claim 6, Fujiyama, as modified, further discloses:

- wherein the step of (b) further comprises a sub-step of pressurizing or decompressing the fine channel after introducing the organic solvent into fine channel (See Fujiyama: while a weight of the order of 1 MPa is being loaded thereon, column 5, line 32).

With respect to claims 7 and 17, Fujiyama with modified Ikeda further discloses:

- wherein the organic solvent is at least one selected from a group consisting of ketone, aromatic hydrocarbon, cyanoacrylate compound and halogenated hydrocarbon (It is well known that the methylene chloride is a form of halogenated hydrocarbon according to Abdelghani et al. (abstract). Note that the non-patent literature of Abdelghani et al. is a supplementary reference in Cited Reference of Non-patent document. And Ikeda teaches: the preferred examples being methylene chloride and xylene. Column 5, lines 1-17).

With respect to claims 8 and 18, Fujiyama with modified Ikeda further discloses:

- wherein the organic solvent is at least one selected from a group consisting of acetone, chloroform, methylene chloride, ethlcyanoacrylate and carbon tetrachloride (see Ikeda: Securing or bonding of the upper and lower sections 10 and 11 with the pad assembly clamped therebetween may be carried out by a variety of techniques. …. the preferred examples being methylene chloride and xylene. Column 5, lines 1-17);

With respect to claims 9 and 19, Fujiyama with modified McReynolds further discloses:

- wherein the upper and lower substrates are made of polycarbonate, polystyrene, polyproplene, polyethylene derivatives or polymethylmethylmethacrylate (see McReynolds: the substrate

materials will comprise polymeric materials, e.g., plastics, such as polymethylmethacrylate (PMMA), polycarbonate, polytetrafluoroethylene (TEFLON.TM.), polyvinylchloride (PVC), polydimethylsiloxane (PDMS), polysulfone, and the like. Column 3, lines 43-45).

With respect to claim 10, Fujiyama discloses in Figs.1a-b, a plastic micro chip comprising:

- an upper substrate [1], a lower substrate [2], a sample filling space [6] having a predetermined height for filling a sample between the upper and lower substrates (The fine passage groove 6 is served as the sample filling space. “A fine passage groove 6 to be used as a liquid sample passage having a width and a depth less than several hundreds um formed”, column 3, lines 64-66. see Figs.1a-b); and

Fujiyama does not disclose:

- a fine channel space for filling an organic solvent so as to bond the upper and lower substrate in a bonding region of a circumference of the sample filing space of the upper substrate; and
- wherein the fine channel space is a sealed region between the upper and lower substrates.

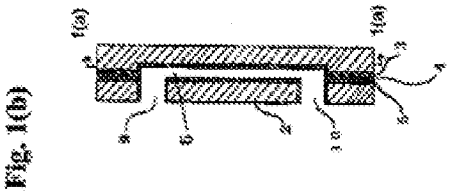


Fig. 1(b)

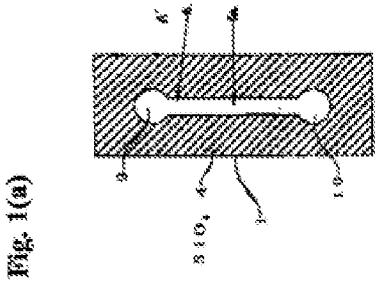


Fig. 1(a)

However, McReynolds discloses:

- a fine channel space [16] (the microscale groove or indentation 16 (column 3, lines 64-65) is served as the fine channel space); and

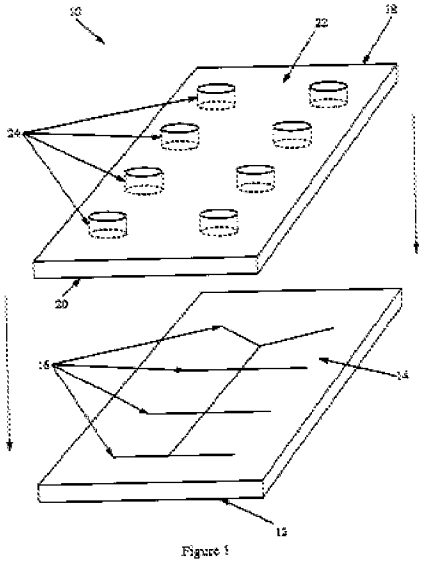
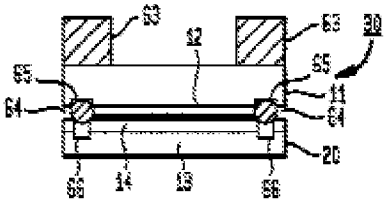


Figure 1

And Chou discloses in Fig.4D:

- a fine channel space [65,66] (peripheral recesses 65,66; PH [0030], line 4) so as to bond the upper and lower substrate in a bonding region of a circumference of the sample filing space of the upper substrate [11] (it is well known that the **peripheral** recesses is a **circumference**; see Chou Fig.4D) ; and
- wherein the fine channel space [65, 66] is a sealed region between the upper [11] and lower [20] substrates (see Chou Fig.4D).

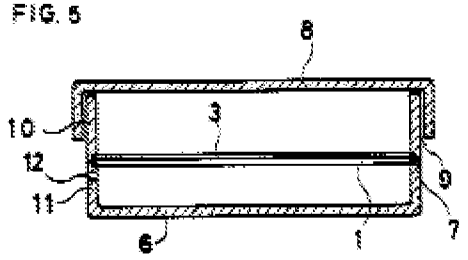
FIG. 4D



And Ikeda discloses:

- an organic solvent (It is well known that the methylene chloride is an organic solvent) to upper [10] and lower [11] substrates (see Ikeda: Securing or bonding of the upper and lower sections 10 and 11 with the pad assembly clamped therebetween may be carried out by a variety of techniques. …. the preferred examples being methylene chloride and xylene. Column 5, lines 1-17);

FIG. 5



It would have been obvious to one of ordinary skill in the art at the time the invention was made to further implement a plastic micro chip with an upper substrate and a lower substrate having a sample filling space of Fujiyama by arranging a fine channel space in a bonding region as taught by McReynolds for correctly and precisely bonding without influencing on properties of sample filling space, and to improved microfabricated substrates, and particularly, to improved bonding together microfabricated substrates in the manufacture of microfluidic devices thereon (see McReynolds: column 2, lines 39-42). Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further implement a plastic micro chip with an upper substrate and a lower substrate having a sample filling space of Fujiyama by arranging a bonding region of a circumference of the sample filing space as taught by Chou to bonding wherein direct fluid pressure is used to press together a plurality of layers to be bonded. The process is particularly useful to provide void free, uniform bonding over an increased area. The bonding can be by pressure alone or by the application of pressure and heat or electrical field thereon (see Chou: Ph [0002]). Then, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further implement a plastic micro chip with an upper substrate and a lower substrate having a sample filling space of Fujiyama by arranging an organic

solvent to upper and lower substrates as taught by Ikeda to bond upper and lower substrate to each other by applying a solvent capable of dissolving the material of which the vessel is made, or an adhesive comprising such a solvent having the material of which the vessel is made dissolved therein, to the mating edges of the upper and lower sections to thereby partially dissolve the vessel material, eventually forming an integral bond thereon (see Ikeda: column 5, lines 8-14).

With respect to claim 11, Fujiyama with modified McReynolds further discloses: further comprising:

- one or more holes [24] (see McReynolds: The holes 24 in the top portion of the device are oriented such that they are in communication with at least one of the channels and/or chambers formed in the interior portion of the device from the grooves or indentations; column 4, lines 12-16)

Fujiyama with modified Ikeda further discloses:

- for introducing the organic solvent communicating with the fine channel (see Ikeda: Securing or bonding of the upper and lower sections 10 and 11 with the pad assembly clamped therebetween may be carried out by a variety of techniques. …. the preferred examples being methylene chloride and xylene. Column 5, lines 1-17);

With respect to claim 12, Fujiyama with modified Ikeda further discloses:

- wherein the organic solvent is at least one selected from a group consisting of ketone, aromatic hydrocarbon, cyanoacrylate compound and halogenated hydrocarbon (It is well known that the methylene chloride is a form of halogenated hydrocarbon according to Abdelghani et al. (abstract). Note that the non-patent literature of Abdelghani et al. is a supplementary reference in Cited Reference of Non-patent document. And Ikeda teaches: the preferred examples being methylene chloride and xylene. Column 5, lines 1-17).

With respect to claim 13, Fujiyama with modified Ikeda further discloses:

- wherein the organic solvent is at least one selected from a group consisting of acetone, chloroform, methylene chloride, ethlcyanoacrylate and carbon tetrachloride (see Ikeda: Securing or bonding of the upper and lower sections 10 and 11 with the pad assembly clamped therebetween may be carried out by a variety of techniques. …. the preferred examples being methylene chloride and xylene. Column 5, lines 1-17);

With respect to claim 14, Fujiyama with modified McReynolds further discloses:

- wherein the fine channel has height of 100 um or less. (See McReynolds: depth, width, length, diameter, etc. that is less than

500 um, and typically between about 0.1 um and about 500 um. Column 2, lines 57-59).

The reference discloses a range of channel height typically between about 0.1 um and about 500 um. As the evidence establishes that a larger set would have been workable and the specification does not disclose any new or unexpected results commensurate with the scope of the claims, the limitation of "depth, width, length, diameter, etc., that is less than 500 um, and typically between about 0.1 um and about 500 um" would have been obvious. "Determining where in a disclosed set of percentage ranges the optimum combination of percentages lies is prima facie obvious" *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003); see also *In re Geisler*, 116 F.3d 1465, 1470, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997) ("It is not inventive to discover the optimum or workable range by routine experimentation." (quoting *In re Aller*, 220 F.2d 454,456, 105 USPTQ 233,235 (CCPA 1995)).

With respect to claim 15, Fujiyama with modified Ikeda further discloses:

- wherein the bonding region is transparent (Ikeda teaches the bonding solvents as methylene chloride. Inherently, it is transparent)

With respect to claim 16, Fujiyama with modified McReynolds further discloses:

- wherein the upper and lower substrates are made of polycarbonate, polystyrene, polyproplene, polyethylene derivatives or polymethylmethylmethacrylate (see McReynolds: the substrate

materials will comprise polymeric materials, e.g., plastics, such as polymethylmethacrylate (PMMA), polycarbonate, polytetrafluoroethylene (TEFLON.TM.), polyvinylchloride (PVC), polydimethylsiloxane (PDMS), polysulfone, and the like. Column 3, lines 43-45).

Response to Arguments

4. Applicant's arguments with respect to claims 1-19 have been considered but are either moot in light of the new ground(s) of rejection or are not persuasive.

5. In response to applicant's arguments of "In McReynolds, the grooves and/or indentations 16 (see Fig. I) are … not **for bonding between a top substrate and a bottom substrate** (Applicant highlighted) ", which is against to the references individually because the scope of **the grooves and/or indentations 16** in the prior art of McReynolds is used to teach the scope of **the fine channel space**, so one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

6. In response to applicant's arguments of "**Ikeda …, and does not disclose a bonding method using a fine channel space** like that of the present invention", which is against to the references individually because the prior art of Ikeda is used to teach **the organic solvent** rather than **a bonding method using a fine channel space**, so one cannot show nonobviousness by attacking references individually where the

rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FANG-XING JIANG whose telephone number is (571)270-7548. The examiner can normally be reached on Monday to Friday 7:30Am to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/F-X J/
Art Unit 2815
09-17-2009

/Chris C. Chu/
Primary Examiner, Art Unit 2815
Tuesday, September 22, 2009